(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
8 July 2004 (08.07.2004)

PCT

(10) International Publication Number
WO 2004/056265 A3

(51) International Patent Classification[7]: G01N 33/497, A61B 5/083 // C12N 5/12, 5/06

(21) International Application Number: PCT/DK2003/000935

(22) International Filing Date: 23 December 2003 (23.12.2003)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
PA 2002 02001 23 December 2002 (23.12.2002) DK
60/439,450 13 January 2003 (13.01.2003) US

(71) Applicant *(for all designated States except US)*: **UNISENSE A/S** [DK/DK]; Forskerparken, Gustav Wieds Vej 10, DK-8000 Århus_C (DK).

(72) Inventors; and

(75) Inventors/Applicants *(for US only)*: **OTTOSEN, Lars, Ditlev, Morck** [DK/DK]; Knud Rasmussens Vej. 8, DK-8200 Aarhus N. (DK). **RAMSING, Niels, B.** [DK/DK]; Ellebergvej 23, DK-8240 Risskov (DK). **DAMGAARD, Lars, R.** [DK/DK]; Skt. Pauls Kirkeplads 15, 1, DK-8000 Aarhus C (DK). **GUNDERSEN, Jens, K.** [DK/DK]; Soeskraenten 29, DK-8260 Viby J. (DK).

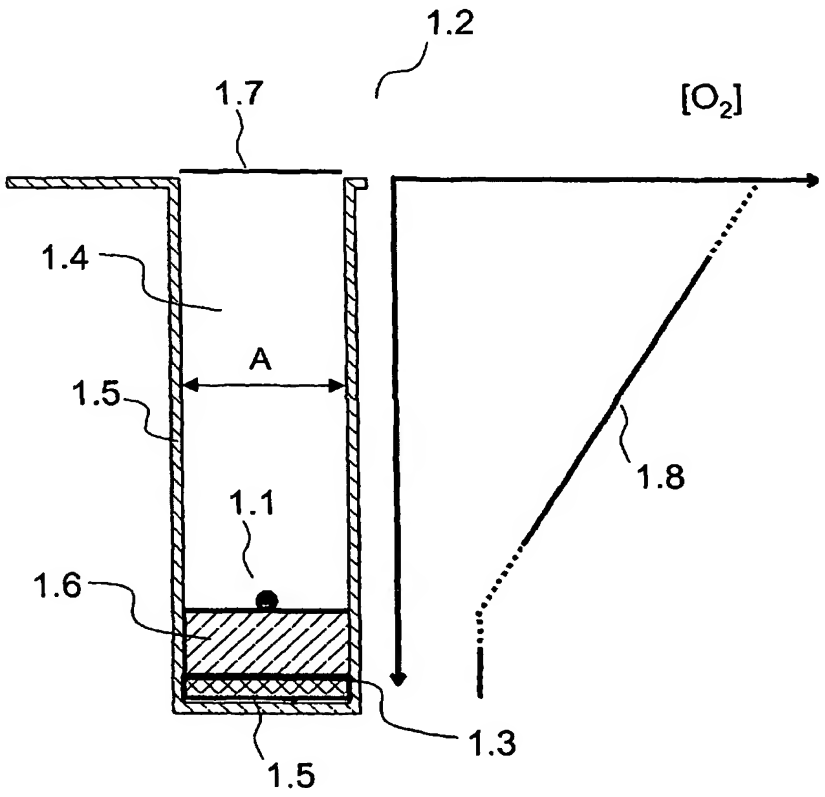
(74) Agent: **HØIBERG A/S**; St. Kongensgade 59A, DK-1264 Copenhagen K (DK).

(81) Designated States *(national)*: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States *(regional)*: ARIPO patent (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE,

[Continued on next page]

(54) Title: DEVICE AND METHOD FOR NON-INVASIVE MEASUREMENT OF THE INDIVIDUAL METABOLIC RATE OF A SUBSTANTIALLY SPHERICAL METABOLIZING PARTICLE



(57) Abstract: The present invention relates to methods and devices for non-invasive and non-disturbing measurements of metabolizing rates of substantially spherical metabolizing particles, such as an embryo, and to a method and device of controlling oxygen partial pressure at the level of the embryo. Furthermore, the invention relates to a method for regulating supply of metabolites to a substantially spherical metabolizing particle, as well as a method for selecting substantially spherical metabolizing particles of a predetermined quality. The invention is carried out in a device capable of establishing a diffusion gradient of metabolites between the substantially spherical metabolizing particle inside a compartment in the device and the environment outside the compartment. The metabolizing rate is determined based on information of the metabolite diffusion gradient.

WO 2004/056265 A3